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TITLE : ALLOY EXCELLENT IN RESISTANCE TO CORROSION, WEAR, AND CRACKING,
PRODUCTION OF THE ALLOY, AND MATERIAL FOR PRODUCTION OF THE ALLOY

ABSTRACT : PROBLEM TO BE SOLVED: To produce an alloy excellent in corrosion resistance, wear resistance, and cracking resistance by allowing MC carbide grain phases of specific grain size, in which a part of V is substituted by groups IVa and Va elements, to exist in a matrix of Fe-base alloy, etc., at specific area ratio.

SOLUTION: Iron-base alloy such as austenitic stainless steel, Co-base alloy such as stellite-type Co-Cr-W alloy, Ni-base alloy such as 'Hastelloy(R)', etc., are used as matrix. On the other hand, M of the MC carbide grains to be dispersed in the matrix is constituted so that a part of V is substituted by groups IVa and Va elements. The MC carbide grains are allowed to exist as grain phases of $\leq 15\mu\text{m}$ grain size in the matrix at 5-15% area ratio. This alloy can be obtained by melting a powder mixture of the matrix alloy powder and the MC carbide powder of $\leq 20\mu\text{m}$ grain size by means of a high energy density heat source such as plasma arc and then performing cooling to crystallize and/or precipitate MC carbide grains of $\leq 15\mu\text{m}$ grain size.

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